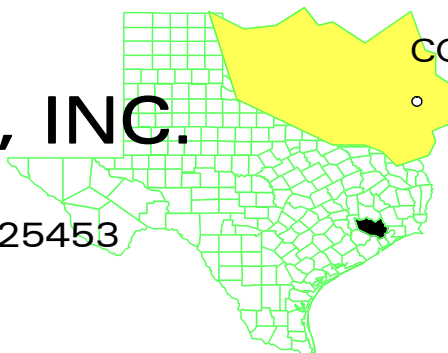


BRIO REFINING, INC. TEXAS

EPA ID# TXD980625453

Site ID: 0602601



EPA REGION 6
CONGRESSIONAL DIST. 22
Harris County

Other Names:
JOC Oil Aromatics, Inc.
Lowe Chemical Company

Updated:
11/10/03

Site Description

- Location:**
- The Brio Refining, Inc. site is located at 2501 Dixie Farm Road in southern Harris County, Texas.
 - The site is about 1.5 miles southwest of Interstate Highway 45 south (Gulf Freeway) at the Ellington Field exit.
 - The City of Friendswood is approximately 1-2 miles to the south.

- Population:**
- Approximately 5,000 people within one mile of site.

- Setting:**
- Nearest residence is within 1/4 mile from the site.
 - Nearest drinking water well is within 0.5 mile radius of the site, but draws water from an uncontaminated aquifer; however, it is currently not in use.
 - The site occupies approximately 58.1 acres; Dixie Farm Road divides the site into two parcels. The northern tract of site, historically used for storage purposes, and the southern tract used for processing activities.

- Hydrology:**
- Mud Gulley (a stream) borders the site to the west.
 - Surface drainage from the site is to the southwest into Mud Gulley.
 - Soils on the Brio site consist of surface clay ranging in thickness from twelve to twenty feet across the site. Below this zone is silty clay with interbedded sands. This zone is approximately 25 feet thick.
 - Below the sand channel zone is a rich clay zone with an average thickness of ten feet.
 - Below the clay zone, a thick sand is found across the site at about 50'-55' below the surface. The sand thickness is approximately 40'.
 - Two water-bearing zones have been identified in the immediate subsurface of the site. The uppermost water-bearing zone is the stratum referred to above as the sand channel zone, and is found at depths ranging from 14.5'-21.5' and extending to depths of 40'-45'. The direction of flow is toward Mud Gulley (southwest).
 - The second water-bearing zone is the stratum termed the "50-foot sand". This aquifer is found at depths of between 52' and 61.5' to depths of between 92.5 and 99' below the surface. There is a positive vertical hydraulic gradient from the deeper water-bearing zone toward the shallow water-bearing zone in certain portions of the site.

Present Status and Issues

- The Remedial Design is complete for all remedy components including the slurry wall and the sheet pile wall.

- The slurry wall was completed in November 2000 and encompasses about 80% of the site. The remainder of the barrier wall was completed with sheet piling in 2001.
- The final cover system is complete for the north and south side of the site.

Wastes and Volumes

- The principal pollutants are found in various on-site pits.
- Pollutants characteristic of the site include styrene tars, vinyl chloride, chlorinated solvent residues, metallic catalyst, and fuel oil residues.
- Contaminants can be found at concentrations greater than 100K mg/kg.
- Soil contamination - 700,000 cubic yards of measurable amounts of contaminants.
- Soil contamination in excess of Endangerment Assessment action levels - 62,000 cubic yards.
- Sludges and liquids in soils may account for an additional 40,000 cubic yards.

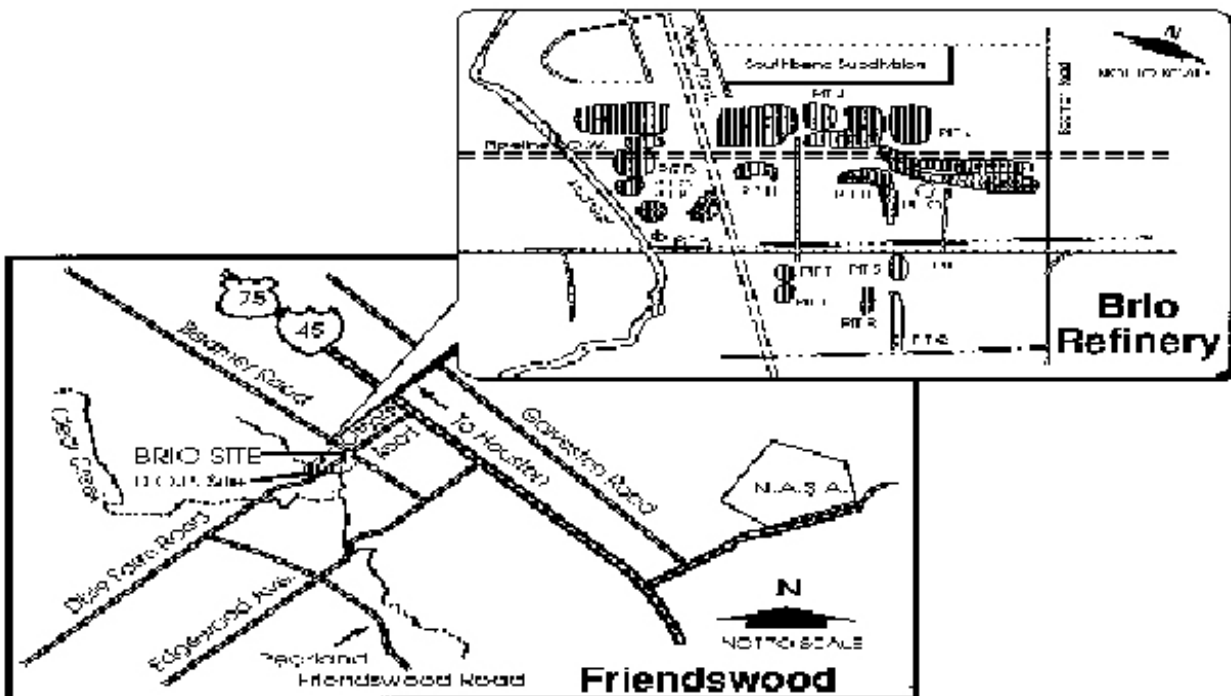
Site Assessment and Ranking

NPL LISTING HISTORY

Site HRS Score: 50.38
 Proposed Date: 10/5/84
 Final Date: 3/31/89
 NPL Update: No. 2

- The Potentially Responsible Parties (PRPs) erected a fence around the site in January 1985.

Site Map and Diagram



The Remediation Process

Site History:

- Operations began at the Brio Refining site in 1957.
- The site operations included by-product recycling, copper catalyst regeneration, petrochemical recovery, and jet fuel processing. Styrene and vinyl chloride tars stored in open unlined impoundment waiting for processing.
- The site was owned and operated under several different names until Brio Refining, Inc. declared bankruptcy in 1982.

Health Considerations:

- On-site soil and ground water contamination by 1,2 dichloroethane, 1,1,2 trichloroethane, vinyl chloride, fluorene, anthracene/phenanthrene, pyrene and other hydrocarbons and copper exists to depths greater than 18 feet. Air releases have been documented for 1,1,2 trichloroethane, 1,2 dichloroethane, and vinyl chloride along with other organics.
- Contaminated ground water discharges to Mud Gully which flows into Clear Creek. Interim ground water recovery is required to prevent human exposure to contaminated fish. Texas Department of Health has posted fish consumption advisory.

Other Environmental Risks:

- A housing development bordered the site on the north. The subdivision was demolished under a third party action.
- A municipal drinking water well located less than 0.5 mile from the site is 1200 feet deep.
- Shallow ground water contamination is evident (primarily 20'-45' aquifer, some reported in 50'-100' aquifer).

Record of Decision

Original signed: March 31, 1988

Amended ROD signed: July 2, 1997

- Installing a sub-grade vertical barrier wall enclosing the site;
- Capping the site with a cover system consisting of compacted clay, liner, and gas collection system;
- Constructing a groundwater flow control system to manage the migration of contaminants within the containment system;
- Improvements to Mud Gully to ensure flow capabilities within the drainage system (not required if Mud Gully is re-routed).
- Dismantling of process facility, impose deed restrictions and control site access.

Other Remedies Considered

Reasons Not Chosen

1. Incineration

Short-term risks due to VOC emissions. Lack of community support

Community Involvement

- Community Involvement Plan: Developed 12/84, revised 8/85, 8/89, EPA revision 6/94.
- Open houses and workshops: 10/84, 5/85, 4/86, 12/88, 4/89, 1/90, 8/91, 11/93, 2/94, 7/94.
- Mayor's Community Leaders Meetings: 3/90, 4/90, 5/90, 6/90, 7/90, 8/90, 1/91.
- Original Proposed Plan Fact Sheet and Public Meeting: 1/88
- Original ROD Fact Sheet: 5/88
- Fact Sheets: 9/85, 9/88, 10/88, 8/89, 2/90, 4/90 (2), 12/90, 1/91, 5/91, 8/91, 9/91, 12/92, 11/93, 7/94, 8/94, 6/95.
- Citizens on site mailing list: 827
- Constituency Interest: High level of concern with ground water contamination, health, property values. Citizens serve on Community Advisory Group, which meets regularly.
- Amended Proposed Plan distributed 7/97
- Site Repositories:

1. San Jacinto College-South Campus, 13735 Beamer Rd., Houston, TX 77089

- Community Advisory Group (CAG) established 9/94.

CAG meetings monthly, 1994-95

CAG submitted application for new TAG, 2/95

Technical Assistance Grant

- Availability Notice: 6/22/89
- Letters of Intent Received:
 - 1) 6/1/89 - South Belt Superfund Coalition (SBSC)
 - 2) 9/2/90 - Homes, Environment and Lives in Peril (HELP)
 - 3) 8/7/97 - Brio community Advisory Group (BCAG)
- Final Application Received: 12/90 - HELP
- Grant Award: 1/31/91; Second grant 6/12/95; Third grant awarded 7/8/98.
- Current Status: 1st grant closed 9/94. 2nd grant closed 7/9/98. 3rd grant still active.
- Technical Advisor: Grant has no technical advisor at this time.

Supplemental TAG:

- Supplemental TAG made available by EPA 12/94 (site complexity & community request).
- Availability Notices: 12/94 in area newspapers.
- CAG submitted application for Supp. TAG: 2/11/95
- CAG submitted intergovernmental review: 4/95
- Grants Awarded: 6/7/95, 7/9/98 to Brio Community Advisory Group (BCAG)
- Budget Periods: 6/12/95-6/11/98, 6/12/98-6/11/01
- Grantee: Brio Community Advisory Group
Marie Flickenger
Houston, TX
- CAG runs solicitation for Technical Advisor notice: 7/95
- Technical Advisor: none
- Current Status: TAG budget/project period ended on 6/11/01.

Contacts

- **Remedial Project Manager (EPA):** John Meyer, 214-665-6742, Mail Code: 6SF-LL
- **State Contact:** Faye Duke (TNRCC), 512-239-2443, Mail Code 143
- **Community Involvement Coordinator (EPA):** Donn Walters, 214-665-6483, Mail Code: 6SF-P

- **Attorney (EPA):** Anne Foster, 214-665-2169, Mail Code: 6RC-S
- **State Coordinator (EPA):** Karen Bond, 214-665-6682, Mail Code: 6SF-AP
- **Region 6 Ombudsman (EPA):** Arnold Ondarza, (303) 312-6777
- **Prime Contractor:** Corps of Engineers, EPA oversight

Enforcement

- A Consent Order was entered into with PRPs in 6/85 for conduct of the RI/FS.
- Administrative Order on Consent signed on 6/29/89, to cover dismantling of the process facility.
- Consent Decree lodged: 8/89, public comment period: 8/15/89 - 12/30/89
- Notice of CD Hearing: 12/90; CD Entered: 4/91

Amended Consent Decree entered on March 5, 1999

Benefits

- Approximately 100,000 gallons of highly contaminated sludges and solids have been removed from the site through early actions reducing the risk of combustion in the tanks.
- Over 25 million gallons of ground water have been treated and approximately 38,000 gallons of DNAPL has been removed from the site reducing discharge to Mud Gully to safe levels. The reduction in discharges has prevented a recreational contact ban in the receiving water body of Clear Creek.
- Over 84,000 gallons of DNAPL has been removed from underneath the former storage pits.